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On Budgets, Patents, Misconduct, Etc.

Q&A With NIH Director Bernadine Healy

Bernadine Healy, a cardiologist who formerly was chief of research at the Cleveland Clinic and Deputy Director of the White House Science Office, became Director of the National Institutes of Health last April. The post usually draws little attention in Washington outside of biomedical circles. But Healy has broken that pattern by vigorously championing women's health research, openly criticizing NIH's Office of Scientific Integrity and clashing about it with the formidable Congressman John Dingell, and pitching for more money for research grants and an expansion of NIH inhouse research. Healy spoke to SGR Editor Greenberg on October 21. Following is the text, transcribed and edited by SGR.

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SGR. The biomedical-research community is shouting "crisis"—not enough money for worthy grant applicants. Some people think the real problem is overpopulation in biomedical research.

Healy. The conventional wisdom is that the number of people applying for grants has gone up. That is not the case. You can look at it in two ways: First, just the number of applicants or applications for research that NIH gets. In fact, that has been close to flat—very little growth in number of applicants per year, or applications per year, let's say over the past five to seven years. And if we put in there the fact that about 26 percent of our applications in any given year are repeat applications—eight or nine years ago it was about 16 percent—then we really have reached a plateau in applications.

Second, look at what I call the brain trust, the number of principal investigators (PIs) that are being funded—who represent the brainpower that constitutes the NIH enterprise. For the past three years, there has been a slow but steady *decrease* in the total number we're supporting. The total swing is in the range of between 300 and 600 scientists that we're not supporting. So, that tells me that we don't have a big problem with too much demand. I'm concerned that demand, if anything, is starting to fall off, and at least is not increasing.

There's a saying I read somewhere, "No one goes to that restaurant anymore, because it's too crowded." Indeed, we may be approaching that. If we continue to see fewer PI's supported, if we see a plateau in the applications, and even a real decline in the number of people applying, then we're

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They're Still Thinking About It

Bromley's Visit to Tokyo Fails to Find Help for SSC

White House Science Adviser D. Allan Bromley has returned scoreless from a fund-raising trip to Tokyo in behalf of the Superconducting Super Collider (SSC).

Like his luckless predecessors who pilgrimaged to that wealth-laden land in recent years to plead for money for the SSC, Bromley found solace in the face of disappointment. Upon his return, he stated that "it was made clear that our request is under active consideration"—an assurance that matches faith in "one size fits all," "I'll call you for lunch," and "no job too small."

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In Brief

Congressmen achieved a new high in benevolence for their local universities last year, "earmarking" some $500 million for labs and other facilities, according to the Congressional Research Service. The growth, from $270 million just two years earlier, is an uncontrolled assault on budgets for peer-reviewed projects, says Chairman George Brown of the House Science, Space, and Technology Committee. He says Congress should outlaw earmarks and establish a peer-reviewed fund for academic construction. Brown also noted a surge in the ranks of registered lobbyists for universities.

At the request of Rep. John (the Stanford Slasher) Dingell, the indirect-cost accounts of the National Academy of Sciences are being scrutinized by the Defense Contract Audit Agency and the Office of Naval Research, which sets the NAS overhead rate. The Academy receives about 75 percent of its revenues from federal contracts.

Various components of NIH have budgeted about $4.5 million to promote collaboration with researchers in the Soviet republics and Baltic states. In announcing the availability of support, Philip Schambra, Director of the NIH Fogarty International Center, said: "We want them to know that we are ready to help them and have several programs that can provide support for their research." For information: Fogarty International Center, Building 31, Room B2C08, NIH, Bethesda, Md. 20892; tel. 301/496-1491.

The Commerce Department reports strong industrial interest in its fledgling Advanced Technology Program, which provides cost-sharing for developing generic technologies. The first round drew 249 proposals, from which 11 awards were made last March. The second round brought in 271 applications. Awards due next spring.

. . . No Growth in Numbers of Applicants or Grants

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looking at a contracting, not an expanding, biomedical-research enterprise.

SGR. *Isn't the grant portfolio at a record high, or close to it, of about 20,000?*

Healy. Right, it's at a record high by a few hundred grants. But it's essentially a no-growth portfolio. Over the past five or six years, there were two years when the portfolio dipped by a few hundred grants. Now it's back up. But it's about 20,500, and that includes the infusion for AIDS and the Human Genome. Without those, it really is a flat portfolio.

SGR. *The dip you referred to was for lack of money, not for lack of applicants.*

Healy. The key thing is that the number of applicants is not increasing. It's not that we have twice the number of applicants now that we had five years ago. We have close to the same number of applicants. The thing that's doubled is not the applicants and it's not the people who are supported. The thing that doubled in the past five to seven years is the cost of grants.

SGR. *Is this a matter for concern, or does this represent some kind of happy equilibrium?*

Healy. It would be a happy equilibrium if the compelling opportunities in the biological sciences were not expanding. We are seeing a growing gap between what we can fund and those opportunities.

SGR. *What does this suggest in terms of budgets? NIH has had extraordinary financial growth in recent years.*

Healy. First, I don't think it has had extraordinary financial growth in the past five years. We've been looking at single-digit growth, certainly '92, '91. I would agree that earlier on, there was phenomenal growth, but I don't think we've seen the same kind of growth that we see in our sister scientific agencies like NASA or NSF.

SGR. *NIH is about three times the size of NSF.*

Healy. They're about $3 billion and we're about $8.5 billion. But remember, we also have a whole dimension of applied work that NSF does not have to do. NASA [$15 billion] is bigger than we are. NIH has not been growing at the same rate. The more fundamental question is whether there's just an insatiable appetite of science in general in that whatever you throw at it, it will consume, and still be unsatisfied. I think that is a legitimate question, if you say that the major force that should be driving [science funding] is satisfying the appetites of scientists. I don't think the scientific enterprise, whether in biology, medicine, or space, or NSF, should be driven solely by the appetite of scientists. I think it should be driven primarily by the needs of the country to have a robust scientific base.

Those decisions should not be solely in the hands of scientists. Now, I realize that might be viewed as heresy. The notion that science exists for scientists, that NIH exists for knowledge for knowledge's sake, science for science's sake, is simply not the case. It is counter to the mission of the NIH, it's counter to the public law that established NIH. And, in fact, its budget could not be justified if it were purely science for science's sake.

SGR. *No one seriously argues that NIH exists for the scientists who work for it. NIH is a health agency.*

Healy. It's a health sciences agency. I view NIH as domestic national security. So, it's more than a health agency. It exists to promote the health of the country, to fight disease.

SGR. *This is the 20th year of the National Cancer Act, the so-called War on Cancer. It often evokes the cliche that the record shows that you can't solve problems by throwing money at them.*

Healy. I think you have to make sure that you're careful in choosing your outcome variables. If it was going to be that the War on Cancer would be declared a victory in 20 years, then you're correct. You can't throw any amount of money over a period of 20 years and say that you're going to cure all cancers. I personally think that the War on Cancer was well-conceived, was a great success story, and it was executed magnificently, in that so much of the resources were invested in basic biology. The War on Cancer has brought us to a very exciting brink of understanding the pathogenesis of cancer at the cellular and genetic level. And it also has had spinoffs that nobody ever would have predicted, such as preparing us to deal with the AIDS epidemic and providing the base of molecular virology that was essential to get us moving very quickly in that field. I believe that it just should have been broader, it shouldn't have just been the War on Cancer, but a much broader war on human disease.

SGR. *The cancer statistics suggest that the War on Cancer has been a great scientific success, but not so great a medical success.*

Healy. It depends on so many variables, because cancer refers to all cancers, and you've had over that period of time some counterforces. People are also living longer now than

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Editor and Publisher
Daniel S. Greenberg

Associate Publisher
Wanda J. Reif

European Correspondent
Francois Seguier (Paris)

Circulation Manager
Glen D. Grant

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. . .Second NIH Campus Is Part of Long-Range Plan

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they did 20 years ago. And as people get older, their susceptibility to cancer increases. When you detect cancer in earlier stages, you're going to have a higher prevalence of cancer in your population. Part of it is a statistical situation because surveillance is better. We've made great strides in certain cancers, certainly in the leukemias, Hodgkin's disease. We're doing better with breast cancer. It's more prevalent, but we have better therapies. Life expectancy seems to be longer. To say that we haven't made important contributions to cancer is wrong. To overstate those and to say that we have cured major cancers is not correct either.

SGR. *With the experience of 20 years of the Cancer Act, how do you feel about mobilizations focused on a disease or an organ. At present, we're in the Decade of the Brain.*

Healy. I think we should move beyond that approach. We should be looking more broadly at the biomedical-research enterprise, and we should be looking at the opportunities that are ongoing at the fundamental level of the basic biology and the opportunities to translate them across the spectrum of disease. The problem is that it's hard to package that, it's hard to make that translatable to the public who are afflicted with specific diseases or specific problems.

SGR. *Proponents feel there's political utility in packaging programs, like the Decade of the Brain.*

Healy. The fact is we *are* in the decade of the brain. It was an appropriate descriptor, because we are and are likely in the future to be making incredible advances in bringing neuroscience and behavior together. That gives it an appropriate description. What will its political utility be? In an immediate sense, I don't think it's overwhelming.

SGR. *When you held a "Town Meeting" with the intramural staff [September 20], you talked about building a "North Campus" of NIH. Where is the North Campus?*

Healy. I said in my confirmation hearing and at the Town Meeting, you never get more than you dream for. But you shouldn't dream about things that are totally unrealistic. And I would put the North Campus in one of those categories, as something that we realistically should be dreaming about today.

SGR. *Geographically, where is it?*

Healy. I think it has to be within a reasonable driving range of the major [NIH] campus.

SGR. *It's not part of this reservation?*

Healy. And it has to be where the land is affordable.

SGR. *That's Mississippi.*

Healy. No, no, no. We have some specific ideas that I can't articulate right now. But let me go to the strategic plan [for the future of NIH]. When we all met for two solid days [at a recent planning retreat], about 100 strong, we agreed that one of the strategic issues for NIH is the future of the intramural program. The intramural program has got to be more than a duplication or clone of the research programs throughout the country. There has to be something unique or special to justify an intramural program. And there are things that are unique or special. The intramural research isn't tied to a grant program. Very high risk, creative and innovative work can be done that just can't be done on the outside because of being tied so much to annual progress reports and to reapplying for grant money.

The other thing is that a federal laboratory has the ability to aggregate large facilities and to become a national resource for those facilities. NIH was one of the first biological facilities to have a supercomputer and to interface it with molecular biology. Structural biology is a very costly and expensive emerging and important area. There's no reason in the world why the NIH intramural program shouldn't be a mecca in structural biology, a CERN [European Center for Nuclear Research] for molecular biology, which would include structural biology. It could be both a self-contained resource and a national resource where people from all over the country, if not the world, could come to utilize its brainpower, facilities, and resources.

If you're going to think about the future of the intramural program, you have to acknowledge that we need an expanded facility. The intramural program has pretty much been no-growth. In square-foot per investigator, we're the leanest of the lean. When I came, I first thought, my God, you've got 300 acres, we can build things everywhere. But because of environmental requirements, traffic patterns, and parking problems, that's not reasonable. So, if we are going to reinvigorate the intramural program of the NIH and say that 10 or 15 years from now, when we look at NIH, the intramural program will be the jewel in its portfolio, one of the major unique contributors to biomedical research in this country, we have got to have a way of dramatically shifting how we're doing business in the intramural program.

SGR. *Have you asked the Department [of Health and Human Services] for permission to proceed with this? Do you have a real estate agent looking for land?*

Healy. No, no. What we first have to do is put together a proposal, a plan. The Department knows we're doing that. There are two ways you can do this. You can just say, Gee, just because it's here, it needs to grow, and just because we have so many square feet per investigator, it should grow, and say, okay, we need more space, and view that as an isolated request. Or you can do it the other way, which is to look at the intramural program as part of a bigger picture and try to analyze where it fits into that bigger picture. If you ask, where does the intramural program fit in the constellation of the NIH enterprise, one thing that falls out is that there is a space problem that has to be met.

SGR. *Because of competitiveness concerns, your neighbor NIST [National Institute of Standards and Technology] is sensitive about foreign visitors to certain parts of its facilities, particularly Japanese and Germans.*

Healy. We have always operated under a largely open-

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. . . Says NIH Misconduct Office Has Too Much Power

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door policy and total lack of secrecy and freedom of information. You don't have to have any kind of special badge or clearance process to get into our laboratories or to train. Wherever you come from in the world, you're welcome. However, the one thing that has changed that a tiny bit are the CRADAs [Cooperative Research and Development Agreements between NIH researchers and industry]. Because, under CRADAs there is some element of proprietaryness to research done with the for-profit sector.

SGR. *Your colleague Dr. [James] Watson [Director of the NIH National Center for Human Genome Research] has said on a number of occasions that if the Japanese don't pay up for the Genome Project, they can't share the benefits. He's never quite clear about whether he's speaking as an official of the US government, which he is in part, or only as Jim Watson.*

Healy. The fact is that it is possible for anyone in the world who so chooses to participate in whatever comes out of the Human Genome, because it is publicly communicated. We have no secrets at NIH. Have I learned that! That's not just in science, but in everything else we do. The Japanese happen to be more aggressive in pursuing the great opportunity which is called the NIH. And the fact that they teach English to their students at an early age and that they send them to these places of opportunity is a credit to the Japanese. We may all learn to think a little more Japanese in a few areas, like longer range planning. We have never ever seriously entertained, aside from the CRADAs, restricting access to our laboratories to people from abroad.

SGR. *It's just come out that last June, NIH filed patent applications for 350 DNA fragments, and there are cries of foul from academe and industry. Why are you doing this?*

Healy. For one thing, we have statutory encouragement to do it. We're doing it for many of the same reasons that institutions outside the NIH are doing it. We believe that technology transfer is an important part of our mission, and that patenting does provide encouragement for technology transfer. There also is a sense within NIH that if the federal government has a patent, that we can have some control over the licensing of that particular discovery, and often do it in a favorable and public-interest oriented way.

SGR. *Some scientists have expressed concern that the patenting will thwart research because people will feel the areas have been preempted by NIH.*

Healy. I don't give a lot of weight to that particular concern. There is not a tangible difference to whether or not the intramural lab at NIH patents an idea or the extramural lab of the NIH patents an idea. We still have intellectual property which is born in the brain of the scientist or group of scientists and the patent gives a certain amount of time-limited proprietariness to that discovery, but forces it out into the public domain. I think there's a bit of a tempest in a teapot in the concern that NIH be in the patent business.

SGR. *So, the position, then, is that NIH should get in there first, because otherwise somebody else will.*

Healy. No, I think if work has been supported in the intramural laboratory of NIH, the same interest in patenting should prevail there that prevails in the extra-mural community on NIH-supported work that goes on in universities and research institutes. I don't see any difference between the two. It's public money in both cases.

SGR. *You have expressed doubts about the protection of the rights of researchers accused of misconduct under the current procedures of the NIH Office of Scientific Integrity (OSI). Will there be changes in that area?*

Healy. I can't speak to that in specifics, because this is all under deliberation. But what I will say as a matter of general principle is that the notion of some kind of a hearing that affords someone the ability to at least have a cross-examination of the context of evidence is at least worth considering.

SGR. *A cross-examination of the accuser?*

Healy. It may or may not be the accuser. In some cases, it might be the institution or even the NIH which takes on the mantle of the accuser. If the facts are clearcut and self-evident, very often, in misconduct in science issues, the accuser becomes irrelevant. It is not a situation where the accuser is wronged. If the wrong is self-evident in the data or in whatever elements of the research that have somehow been tainted, then the accuser really becomes either the NIH or the [local] panel that has reviewed the case and come to a conclusion.

SGR. *The supporters of the present system say that it's misunderstood, that OSI is really the equivalent of a detective force. It conducts an investigation and if it thinks prosecution is warranted, it sends its conclusion to a higher authority. The accused can have a hearing at a later stage.*

Healy. I think, sadly, and for whatever reason, that may be the intention, but that is not the reality. The reality is that we have had a system that all too often has the appearance of the investigator, or the cop, being the jury, the judge, and the recommender of penalties, all wrapped into one. That's too much concentration of power. I'm not aware of any judicial system in which all that is concentrated in the persona of the cop or of the sheriff. Go back to the wild west. You still didn't have the sheriff acting as the judge and jury. A lot of it has been because of subversion of some of the things OSI is trying to do—like leaks of draft reports as if they're the final word. I don't think it is inappropriate to question whether or not it is consistent with our system of justice to have judge, jury, sheriff, sanction-giver all rolled into one.

SGR. *Will some of these functions be separated from OSI when the reorganization studies are completed?*

Healy. I think probably OSI agrees and I certainly believe that what we need is some separation of functions.

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. . . A New Recognition of Women's Health Issues

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There's such a thing as trained investigators. I will tell you that I have become enormously impressed by the quality of professional investigators that exist in the IG's office [Inspector General of the Department of Health and Human Services]. I've met with them to learn how they go about their business. I've looked at their procedure books and their rule books. They have very, very tight rules for writing reports. They have very, very detailed procedures on how to format a report. I'm very impressed that this is a profession, just like science is a profession. And there is professionalism in investigation. You can't take somebody who is a scientist and give them a two-week course and make them a trained investigator, any more than you take a trained investigator in two weeks and make them a neurosurgeon or a molecular biologist.

Similarly, there are legal issues that come up all the time. There has to be independent legal input on how NIH handles these cases. We are not experienced in that arena. NIH, close to a $9 billion corporation, needs to have more than a small legal office. I think we have one major lawyer and two or three assistant lawyers to handle a vast range of legal issues—patents, chemical spills, our relationship with our grantees, first-amendment rights. We need to have more legal input. Independent legal input is what's necessary.

SGR. *OSI says it operates on the scientific model—do the data exist? If so, present it. The alternative, it says, is the legal model—clash of adversaries from which the truth is supposed to emerge. Would you want to see the misconduct process go to courtroom-style battles?*

Healy. The process we have is clearly adversarial, whether one admits it or not. But there are other models of quasi-judicial procedures which are derived from the judicial process, but which do not involve a courtroom battle with teams of lawyers on either side. They include some of the things that we have in the Grants Appeals Board, some of the administrative law judge activities. There are models which are somewhere in between. When somebody has been accused of some horrible act that is going to deprive them of their livelihood, of their standing in society, you should give them justice. And in our country, the way we give justice is through time-honored judicial proceedings.

SGR. *It's now acknowledged here that research on women's health has been neglected in major ways. How did this failing happen in a place that has so much brainpower?*

Healy. Brainpower doesn't always correlate with common sense or good judgment. The neglect of women's health research and many women's health issues is a syndrome which is generic to the society in which we live. We shouldn't be surprised that the biomedical and medical-practice arenas might also be afflicted with the same neglect. In both health science and the practice area, men are the normative standard. Men as the normative standard is a concept that cuts across the medical profession, and you see it in the legal profession, in manufacturing, in driving, and in most activities. In fact, it is flawed, from a scientific perspective. And finally, for whatever reason—and I have my own theories on this—there's a willingness now to say that it is absurd and we're going to move beyond it.

SGR. *What are your theories?*

Healy. These are from my own observations as a woman who grew up before women's lib, and who was in college and medical school in the '60s, and observed the early years of the women's movement. Part of the phenomenon used to be that the price that women had to pay to move into the professions was to accept that men were the normative standard and that they would move shoulder to shoulder with men by being just like men. That was the thesis I put forward in the "Yentl Syndrome" [*New England Journal of Medicine*, July 25, 1991], and I think it goes beyond cardiovascular research and goes beyond medicine.

I think that some of the phenomena that we saw with women—bra burnings, for example—were part of the notion that somehow women would not have any of the trappings that made them look different from men. In my early years as a physician in training, with both me and my female colleagues, the last thing we would do would be to stress our differences. We were outraged by theories that said a woman couldn't head an organization or, God forbid, be President, because a woman does not have the temperament, due to hormonal balance, to ever have the finger on the button. Which is really a syndrome of women not having the temperament or hormonal makeup or the biology to be able to make critical decisions that would affect more than their immediate families. I think that as women have moved into those positions, those old-fashioned, crusty, out-dated, and fallacious notions are gradually eroding and crumbling. In medicine, there is now the recognition that women's health research has to be viewed from a different perspective.

SGR. *Why didn't the pharmaceutical industry, if only out of economic self-interest, lead the way on this?*

Healy. It may have to do with the predominantly male leadership of the pharmaceutical industry. A woman representing one of the major pharmaceutical companies recently told me how hard it was for her to raise this as an issue among the leadership of her company. She said one of the vice presidents said to her, "Well, it's just a niche market." She said she exploded and said, "A niche market? Women consume 70 percent of the drugs that this company makes." Women are the majority of users of the health-care system. I think that some of the biases we have experienced are prevalent, or more so, in the world of business.

SGR. *In medicine and biomedical research, is there any resistance to these changes?*

Healy. I guess the worst I've seen is some rolled eyes. I think the fight is won. I don't know of any man who has the courage to stand up and object, even if something contrary lurks in his heart.

. . . Chairman Brown Fears New Attacks on SSC

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Bromley's visit to Tokyo, October 15-18, arose from the increasingly desperate circumstances of the SSC, which is inexorably sliding into a fiscal abyss. Rescue will be very difficult without large sums of foreign money or a providential turn on Capitol Hill.

To pacify budget fears about the big machine, the Reagan and Bush Administrations pledged that one-third of the cost would come from non-federal sources and that the SSC would not impinge on the other basic-science programs of the sponsoring Department of Energy (DOE). Both conditions are severely threatened.

Even with a deceptively low estimated cost of $8.2 billion, and a $1 billion sweetener provided by Texas, site of the facility, the non-federal share would be $1.7 billion. But when the bills finally come in, a good deal more may be needed to fulfill the one-third non-federal requirement. DOE's own neutral inhouse team estimated the final cost at over $11 billion, a figure that was set aside by DOE management in favor of the bargain-price conjured up by the SSC's promoters.

Europe has given an unmistakable no to requests for help, while Japan has responded with assorted permutations of maybe, later, and we'll think about it—but no money. The intriguing replies from Tokyo have come in response to various American propositions for contributing to the SSC, including a formulation pushed hard by Bromley—part ownership by Japan and an accompanying managerial role in the SSC [SGR September 15: "US Asks Japan to Become Part Owner of Supercollider"].

So far, however, the only donor claimed by DOE is India, listed for $50 million in scarcely needed engineering services provided by a team whose costs—in the SSC's tradition of fantastical finance—are in part borne by the US.

Meanwhile, one of Congress's most devoted supporters of the SSC, Chairman George Brown of the House Science, Space, and Technology Committee, has expressed fears that the SSC's fiscal needs will eat into other parts of DOE research, in violation of the presidential pledges, and thereby inflame resentment toward the SSC.

Brown's solution is not to rein in the SSC. Rather, he says DOE should loosen up more money for its other research programs—not a feasible course in the present budget climate.

Doubts always existed about the possibility of financing the SSC without damage to other programs, but the potential for cannibalism came into focus at a hurriedly called meeting, held September 19-20, of DOE's recently created Energy Advisory Task Force on Energy Research Priorities, chaired by Nobel laureate Charles H. Townes.

Under the "terms of reference" set out by DOE for the meeting, the Task Force was told that while the SSC was cleared for growth, budget projections for the rest of DOE science are flat through fiscal year 1996. Nonetheless, the guidelines continued, "plans for several ER [Energy Research] programs call for substantial increases over the next four fiscal years."

Directed to draw priorities from the contradictory circumstances of a commitment to rising spending on the SSC, a flat budget, and plans for expanding other programs, the Task Force gave the SSC top ranking, but recommended cuts elsewhere, including delay in the planned B-Factory or Main Injector at Fermilab and cancellation of a major fusion project, the Burning Plasma Experiment. The Task Force also advised DOE to carry out recommendations by another advisory body for "phasing out" the Bevelac at the Lawrence Berkeley Laboratory and the Holifield Heavy Ion Accelerator at the Oak Ridge National Laboratory.

In a letter dated October 24 to DOE Secretary James D. Watkins, House Science Committee Chairman Brown wrote that, in violation of the SSC budget pledge, "The very ground rules proposed to the Task Force clearly indicate that the SSC will be funded at the expense of other science." As a result, Brown predicted, the opposition to the SSC may be reinvigorated "and once again try to defeat SSC construction in the coming session of the Congress."

Brown suggested a simple and unreachable solution for the hardpressed DOE Secretary: "While I appreciate the pressure of budget stringencies facing the federal government and the Department," the Congressman wrote, "I find it difficult to understand why in an agency with a budget of more than $18 billion, science and basic research receive such a low priority. In my view this is contrary to our nation's long-term needs at this pivotal time in our history."

The crunch is coming at a vulnerable stage of the SSC's existence. Employing the standard tactics for building a broad-based political constituency, the SSC managers have disbursed contracts to some 40 states. Congress has appropriated $510 million for the current fiscal year, and the early stages of construction are under way. But the start of big spending is still about two years off. The argument that it's too late to turn back cannot yet be invoked. An undeniable major rise in costs and a definitive no by Japan could prove difficult to overcome.

The SSC is backed by a strong political coalition that includes science-boosting Texan George Bush. But more than ever, the supporters are uncertain about working out the politics to pay for it.—DSG

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Job Changes: NIH Deputy Takes White House Post

William F. Raub, a 25-year veteran of the National Institutes of Health and Deputy Director since 1986, is moving to the White House Office of Science and Technology Policy (OSTP). There he will occupy the newly created position of Special Assistant for Health Affairs, not to be confused with OSTP's more elevated post of Associate Director for Life Sciences, held by Donald Henderson, former Dean of the Johns Hopkins School of Public Health. Raub served as Acting NIH Director from July 1989 to March 1991, a record stand-in, while the Bush White House offended a string of candidates with an abortion litmus test. Though highly regarded as an administrator, Raub was a non-starter for a full-fledged appointment to the top NIH post because he holds a PhD, not an MD, the requisite ticket for the directorship. Raub's departure comes as no surprise, given a series of publicly visible clashes with the eventual choice to head NIH, Bernadine Healy.

Claudio Orzalesi, a Science Counselor at the Italian Embassy in Washington from 1985 to January of this year, has been appointed Italy's Science Attache for international organizations in Geneva. Since January, Orzalesi has been a visiting member of the Physics Department at the University of Maryland, College Park.

Leif Westgaard, Counselor for Scientific Affairs at the Norwegian Embassy in Washington since October 1989, has been appointed Director of the Nordic Academy for Advanced Study, newly established by the Nordic Council of Ministers to coordinate research, training, and education in the five Nordic countries. His successor in Washington is ***Gunnar Wilhelmsen***, a member of the Agricultural Research Council of Norway who has long been active in bioenergy and environmental programs.

Robert M. Rosenzweig has announced that he will retire in spring 1993 as President of the Association of American Universities (AAU), a post he has held since 1983. A PhD in political science and former Vice President for Public Affairs at Stanford, Rosenzweig refashioned the drowsy old AAU into Washington's top lobby for big-league university research.

The British weekly *New Scientist* is eliminating the post of US Editor, a Washington-based position held by ***Christopher Joyce***, who has been associated with the magazine for a decade. Also dropped from the staff are London-based senior editors ***Gail Vines*** and ***Peter Wrobel***.. The magazine plans to put more emphasis on Europe, SGR has been told, and will rely on part-timers for US coverage.

Roy Widdus, Director of AIDS activities for the World Health Organization, has been appointed Executive Director of the National Commission on AIDS, succeeding ***Maureen Byrnes.***

In Print

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Ford and former Director of NSF.

Also available, an earlier report by the Commission: ***Science, Technology, and Congress: Expert Advice and the Decision-Making Process*** (February 1991, 44 pp., no charge).

Order from: Carnegie Commission on Science, Technology, and Government, 10 Waverly Place, New York, NY 10003; tel. 212/998-2150.

Environmental Epidemiology: Public Health and Hazardous Wastes (282 pp., $29.95, plus $3 for shipping), a counterbarrage against the mounting contention that hazardous waste really isn't the nasty problem that the general public considers it to be. The report, by the National Academy of Sciences Committee on Environmental Epidemiology, says the risks cannot be reliably evaluated because the $40 billion spent over the past decade to clean up toxic dumps has provided skimpy support for the necessary scientific studies. Nonetheless the report states, "Despite the lack of adequate data with which to characterize the effects of hazardous wastes on public health in general, the committee concludes that exposures from hazardous waste sites have produced serious health effects in some populations." The report was prepared at the request of the Public Health Service's Agency for Toxic Substances and Disease Registry by a seven-member committee chaired by Anthony B. Miller, of the University of Toronto. Coming from the usually tip-toeing Academy, the report is notable for its strong assertions. Stating that "prudent public policy" requires a "margin of safety" against toxic risks, it adds: "We do no less in designing bridges and buildings."

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800-624-6242; in Washington, DC: 334-3313.

In Print: Science Policy, Communications, BioTech

The publications listed are obtainable as indicated—not from SGR.

AAAS Science and Technology Policy Yearbook: 1991 (398 pp., $18.95 [$14.95 for members of the American Association for the Advancement of Science]; add $4 for shipping), 43 papers on Washington sci/tech-policy affairs by major and minor participants and observers, ranging from George Bush to customarily anonymous specialists in Executive agencies and on Capitol Hill. Most of the contributions are from last April's annual AAAS Science and Technology Policy Colloquium, Congressional speeches and various government reports. Some of the papers are skimpy, but by and large the collection provides a good inventory of mainstream views on issues, controversies, and anxieties in science and government relations. Major topics: The adequacy of federal R&D funding, the Congressional budgeting process, state R&D programs, the quality of R&D statistics, measuring the economic return from research, and scientific misconduct.

Order from: AAAS Books, PO Box 753, Waldorf, Md. 20604; tel. 301/645-5643.

US Communications Policy: Issues for the 1990s: Results of a GAO Roundtable (22 pp.) and ***Panelists Remarks***(166 pp.; GAO/IMTEC-91-52A and 91-52B, no charge), from a conference held last February by the General Accounting Office, with participants from government, industry, and academe focusing on policy issues in communications, including promoting technological innovation, the regulatory structure, and allocation of the electromagnetic spectrum.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

Biotechnology in a Global Economy (GPO Stock No. 052-003-01258-8; 283 pp., $13), from the Congressional Office of Technology Assessment (OTA), an around-the-world survey of biotechnology research and progress toward the marketplace, covering the US and 14 other countries. OTA says the US is far ahead in number of companies and scientific developments, but so far income is virtually nil and cash for product development is increasingly difficult to obtain. Federal funding for biotechnology in fiscal 1990 totaled $3.4 billion, with NIH providing $2.9 billion of that amount, OTA reports. It notes that "in contrast to the US, Japan suffers from the lack of a strong research base, which has led firms to seek access to research and training abroad, especially in the United States." The report lists eight previous OTA publications related to biotechnology.

Also from OTA: ***Improving Automobile Fuel Economy: New Standards, New Approaches*** (GPO Stock No. 052-003-01262-6; 115 pp., $5.50), examines the potential and tradeoffs for new-car fuel economy over the next 10-15 years, and concludes that to maximize technical advances and safety, the present fleet average, 27.5 mpg, should not be pushed beyond 30 mpg for 1996. By the year 2010, OTA says, 45 mpg could be practical. The report, requested by the Senate Energy and Natural Resources Committee, states that fuel-saving weight reductions need not compromise safety, if the automakers are not rushed into producing lighter cars. Citing a report by the National Academy of Sciences Transportation Research Board, OTA notes that "Federal funding for highway safety research has been cut 40 percent since 1981—to only $35 million per year—despite the enormous cost in dollars and tragedy ($70 billion, 45,000 deaths, 4 million injuries per year) of traffic accidents. Additions to safety research and development resources," OTA states, "could go a long way toward mitigating any negative consequences of future fleet downsizing."

Another from OTA: ***US Oil Import Vulnerability: The Technical Replacement Capability*** (GPO Stock No. 052-003-01261-8; 131 pp., $8), update of OTA's 1984 assessment of US reliance on oil imports, this one says that, despite the comforting absence of an oil crisis during the Gulf War, the US is slipping into a vulnerable position because of rising imports and declining domestic production. To deal with the problem, OTA offers a classic options menu, starting with a loser ("continue on the current path and wait until the next disruption occurs before deciding on an appropriate course") and concluding with OTA's choice ("begin now to craft a more comprehensive national energy strategy . . .").

Order from: USGPO, Superintendent of Documents, Washington, DC 20402-9325; tel. 202/783-3238.

Science, Technology, and Congress: Analysis and Advice From the Congressional Support Agencies (70 pp., no charge), by the Carnegie Commission on Science, Technology, and Government, a rare examination of the handling of R&D affairs by the inhouse research organizations that serve the Congress: the Office of Technology Assessment, the General Accounting Office, the Congressional Budget Office, and, within the Library of Congress, the Congressional Research Service Science Policy Research Division and Environment and Natural Resources Policy Division. All the agencies, says the report, should strengthen their science-related staffs, cooperate more closely with each other, give more attention to international issues, and play a bigger part in educating the Congress and the public on R&D matters. Staked by the philanthropic Carnegie Corporation, the Carnegie Commission includes many out-of-office elder statesmen of the Washington sci/tech and politics scene. The report was prepared under the Commission's Committee on Science, Technology, and Congress, chaired by NYU President John Brademas, a House member from 1959-81. Listed as "principal committee member" for the report is H. Guyford Stever, Science Adviser to Presidents Nixon and

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